

# **EXHIBIT 4**

**Sonos UI Specification****Clock and Alarm Clock**

Version 003

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Modified: 1/19/06

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**Notes****This spec doesn't yet include:**

Concept of 'zone scenes' (but they are described in the final chapter)..

Standard 'beep' sounds for backup if the music doesn't play.

Setting Current date and time on the CR (DCR is included)

**TBDs**

Should the Sonosnet get its time and date from the Internet?

UNITED STATES DISTRICT COURT  
NORTHERN DISTRICT OF CALIFORNIA**TRIAL EXHIBIT 6544**

CASE NO. 3:20-cv-06754-WHA

DATE ENTERED \_\_\_\_\_

BY \_\_\_\_\_

DEPUTY CLERK

**Sonos UI Specification: Alarm Clock**

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Should we call this “Sonos Music Scheduler” instead of “Alarms” (since ‘alarms’ only really describe wake-up times, not generic scheduling.

Should Zones in the Zone menu indicate that they have alarms set?

## **1 Requirements**

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### **1.1 Need**

**Regular requests from users to provide the following:**

- Ability to schedule music to wake to.
- Ability to schedule music at other times. For example, “I want to hear music when I come home from work at 6pm”
- Ability to fall asleep playing music, and for the music to play for a defined period (Sleep Timer)
- Ability to replace their current alarm clock with a large clock view on the Controller.

**Less frequent and more advanced requests (that we probably shouldn’t do).**

- Ability to setup extended macros that would automatically and dynamically change the music playing the house. For example, I want to wake at 7am playing NPR in the bedroom, then at 7.30 I want the Living Room and Kitchen to play NPR as well. Then at 8.30 am, as I head out for work, I want the system to stop. All automatically.

### **1.2 Alarm Overview**

**Simplest approach.**

The simplest approach to take, from a UI perspective, would be to say that an alarm can be set up to sound in a particular Zone, at a particular time. The following rules would then apply:

- The alarm will go off and the music will play in all the zones that are currently linked to the particular zone (following our basic concept that linked zones play the same music).
- The alarm plays whatever music is in the Queue for that zone (or zone group). In the case that an Internet Radio Station is showing on the now playing screen, that station will start to play.
- The alarm volume will ramp from quiet until it reaches the volume that each zone in the group was last left in.

The biggest limitation of this approach is that the user needs to spend time each evening to set up the zone groups, volumes and queue.

**A more advanced and flexible alarm**

A zone could (optionally) be will be saved with each alarm. For example, the alarm could link the Bedroom and Bathroom, and make sure that no other zones are linked (this is the concept of Zones Scenes which is discussed in a separate spec).

The alarm could be set to load certain songs in the Queue (from a playlist, or a random set of songs), or to play a particular radio station.



**Sonos UI Specification: Alarm Clock**

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The alarm volume could be set to a particular level regardless of the volume that the alarm was last set to. (in this case should the volume be set individually for each zone I a group – or should each zone have the same volume).

**Alarm Variables**

There will be a finite number of alarms that a user can set (perhaps 32 to correspond with our maximum of 32 zones).

Each alarm will have the following variables

- Alarm on/off
- Zone(s) in which the alarms will sound.
- Frequency (once, weekdays, weekends, everyday)
- Start Time
- Music to be played

Other possible variables

- *End time (or alarm duration 1hr, 2hrs et).*
- *Volume: Set alarm volume, or use whatever volumes the zones are set to.*
- *Volume Level (slider) - dependent on the above setting*
- *TBD what happens if the Volume line level is set to FIXED*
- *Volume Ramp (short, long) (may be overkill – we could just pick a volume ramp for all alarms and save the user having to choose).*
- *Addition buzzer sound (for those people who need more than just music to wakeup)*
- *Play Mode (Shuffle repeat etc) (May be overkill)*

**Other alarm features**

The volume of an alarm should ramp. This will either be a fixed ramp (e.g. 1 minute to final volume), or user definable (short, medium, long).

**Note about Zones**

In it's simplest form, the alarm will sound in the designated zone + any zones that are linked to the designated zone at the time that the alarm sounds

**Volume and unmute**

The alarm should unmute any zones that are muted when it goes off.

**Identical alarms**

What happens if a user sets two or more alarms to go off in a room at exactly the same time

We could

Not allow a time to be set to the same as an existing alarm (difficult to police using our multi-controller architecture)

Allow more than one alarm at the same time, but simply default to one of them.

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**1.3 Clock View**

The Controller should be able to display a full screen view of the current date/time. This is for people who want to use their Controller as a replacement to a bedside clock.

- The current time should also have a low brightness version of the screen (to be left on in dark rooms). This will also act as a screen saver.
- The clock mode should show the alarms that are set for the zone(s) that the user is currently viewing.
- The clock mode should also show a snooze option when the alarm goes off
- The snooze button will delay the alarm by 10 minutes.
- When the alarm goes off, the clock screen should show in normal (no low brightness mode)
- If the user is looking at a Zone that isn't included in the alarm, they will see no special screen
- Only CRs that are in light sleep mode can be awoken by the alarm. Controllers in deep sleep cannot awaken. It will therefore be recommended to users that they dock (or charge) the CR when using the CR as a nighttime clock.

**1.4 Sleep Timer**

- Sleep timer will have the following variables
- Timer (off, 15,30,45, 1hr, 2hs, 3 hrs)
- A sleep timer applies to all the current zones in a group. If one of those zones is dropped from the group, the dropped zone will lose the sleep timer.

**1.5 Setting the current date and time: Sonosnet Time**

Time Zone  
Daylight Savings on/off  
Current Time  
Current Date

The SDMS should get the time from the internet.  
If no internet connection is available, the user should be able to manually set the clock.

Internet time.

- If the connection with the internet is lost. The SDMS will continue to count time with it's internal clock.
- If the SDMS loses power, it should try and reconnect to the correct time via the internet.
- If the power is cycled AND an internet connection cannot be made, the clock should enter a neutral state (equivalent to the flashing 12:00 on a VCR) - It will not start counting from the moment power was returned (otherwise all the alarms will go off at seemingly random times).
- The neutral state shall be reflected in the Alarm settings and Clock View.

**Sonos UI Specification: Alarm Clock**

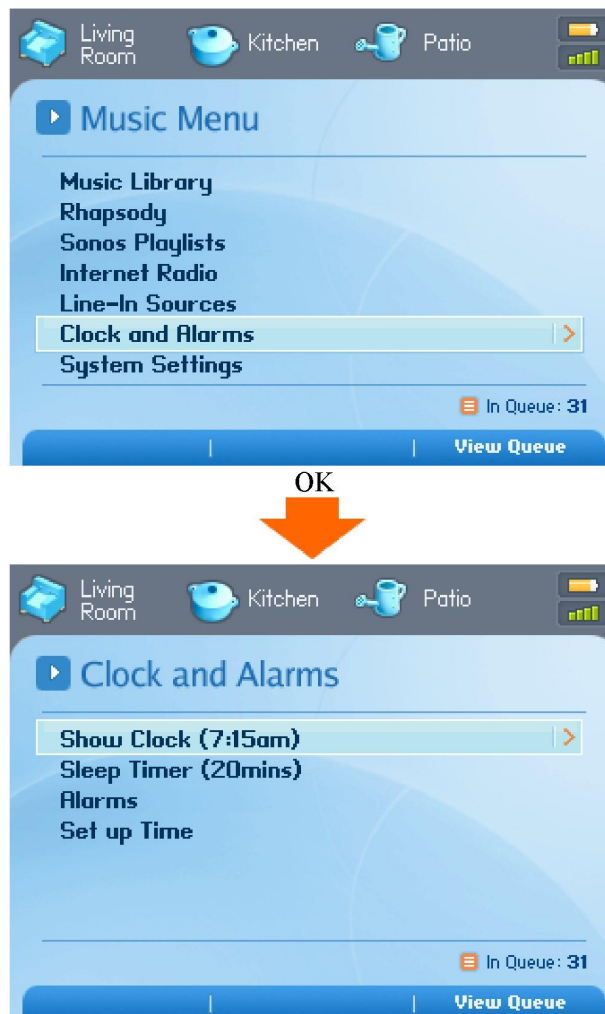
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Setting the date and time should be part of the initial setup Wizard.

**Sonos UI Specification: Alarm Clock**

## 2 UI Spec for Handheld CR

### 2.1 Clock Menu

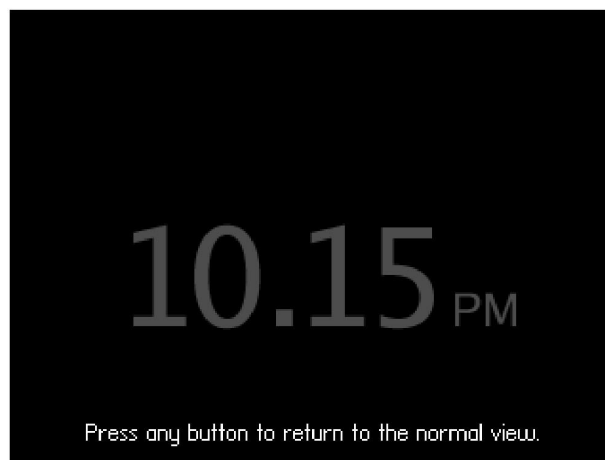


**Sonos UI Specification: Alarm Clock**

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**2.2 Show Current Time**

- Accessed from the “Show Current Time” menu item on the “Clock “page
- “Alarm set for this Zone”, should wrap to 2 lines. After 2 lines the ellipses should show.
- Press OK on this screen returns the user to the Clock menu (same behavior as a pop-up).
- TBD should the an OK on this screen return to the Now Playing screen after dismissal since the next likely action (after Volume change) is to Pause the music.
- (TBD - should the clock also be accessible from the Now Playing screen since it's per Zone.)

**2.2.1 Low Brightness mode**

- Low brightness shows the time dimmed to a mid-gray on a black background

**Sonos UI Specification: Alarm Clock**

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- The message ‘Press any button...’ shows for 15 seconds on the screen and the disappears.
- Pressing any button will return the user to the normal clock view
- When an alarm goes off in that zone, the UI returns to the normal clock view.
- TBD: The time can move on the screen every 15mins to avoid burn-in

**2.3 Alarm goes off screen**

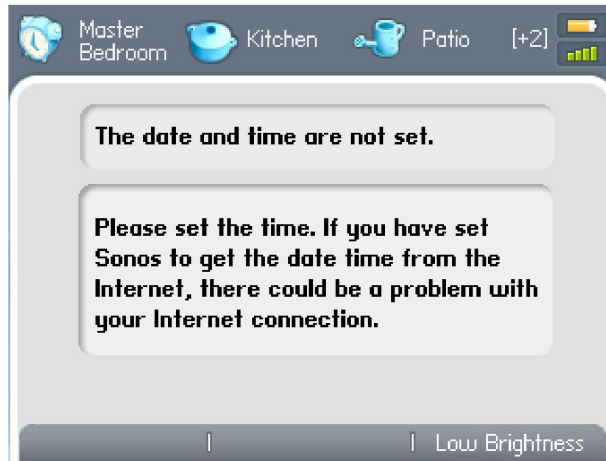
- When the alarm clock goes off (the music starts), the Clock screen soft buttons show ‘Snooze’.
- Pressing the Snooze softkeys stops the music for 10 minutes.
- The alarm will then go off again after 10 minutes.
- TBD what about the buzzer?

**2.3.1 A clock that's not counting time.**

- If the SDMS goes through a power cycle, and an internet connection cannot be made to re-establish the correct time, the clock (and alarms) will enter a neutral state.

**Sonos UI Specification: Alarm Clock**

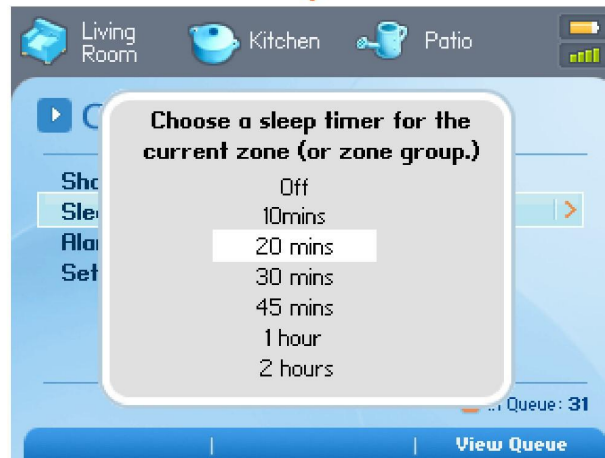
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All other instances of the time being displayed should be replaced with a --:--

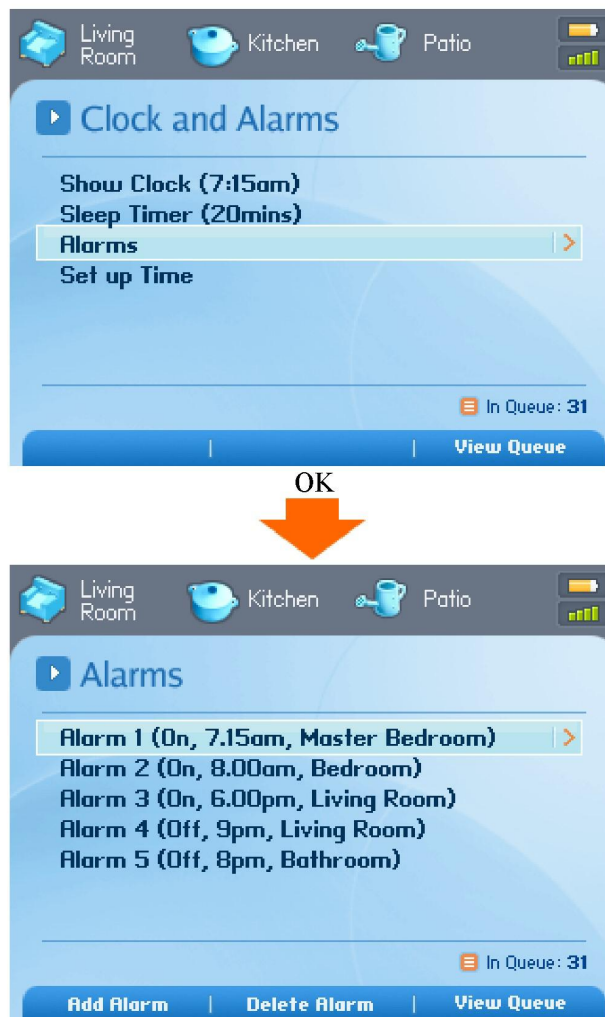
**Sonos UI Specification: Alarm Clock****2.4 Sleep Timer**

OK



- Sleep timer will have the following variables
- Timer (off, 15,30,45, 1hr, 2hs, 3 hrs)
- A sleep timer applies to all the current zones in a group. If one of those zones is dropped from the group, the dropped zone will lose the sleep timer.
- TBD should the time left on the sleep timer show in the menu item (in parentheses), or should it still show the time that the user set when it was invoked.
- When the sleep timer stops (i.e. the time reaches 0 second), it should revert to 'off.'
- At the end of the sleep time (0 seconds), the current Zone Group should be put into 'Pause' mode.

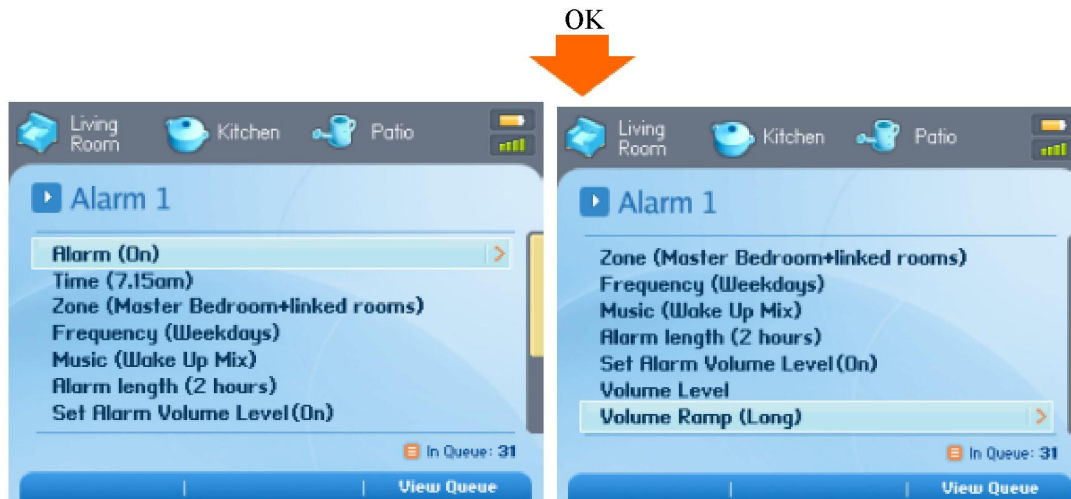


**Sonos UI Specification: Alarm Clock****2.5 Alarm Settings page****Add Alarm**

- Adds a new alarm with the default settings
- The system can contain up to 32 alarms
- If the limits of 32 alarms is reached, add alarm will trigger the following popup message

“You can’t set another alarm because the maximum number of alarms has been exceeded. Please delete an existing alarm before you try to add a new one”

- The default settings for an alarm are described in the section below.
- I don’t think we should number alarms because the count would get crazy with the user being able to delete and Add Alarms.
- .

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Images above show the same screen, but with different scroll positions (top and bottom of list).

The default settings for a new alarm are:

Each alarm will have the following variables

- Alarm [Off]
- Zone(s) [Master of current group]
- Frequency [once]
- Start Time [7:00am]
- Music [Current Queue]

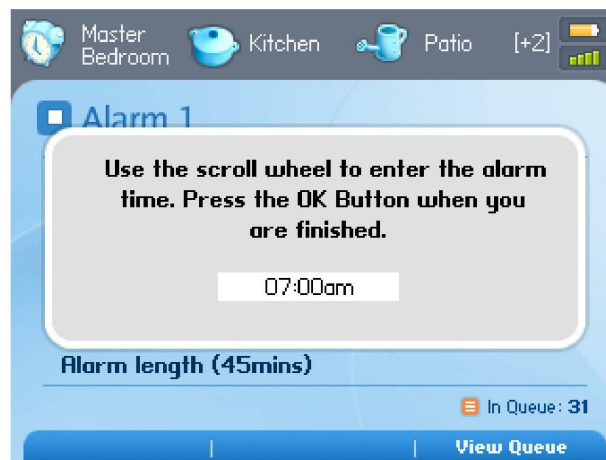
Other possible variables

- End time [no end time]
- Volume [Use current Volumes]
- Volume Level [25%]
- Volume Ramp [Short]
- Addition buzzer sound [Off]
- Play Mode [Normal]

**2.5.1 Alarm on/off**

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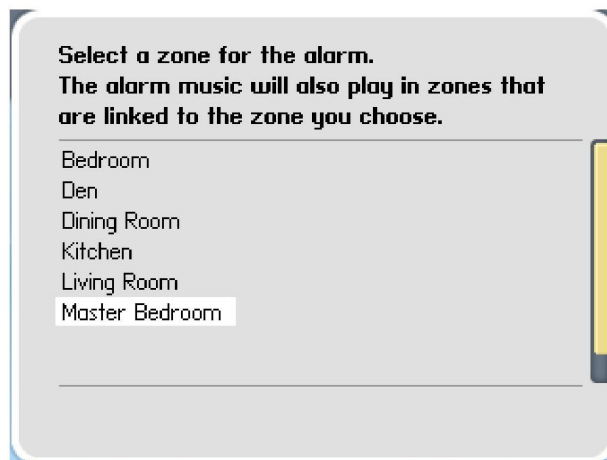
This allows the alarm to be turned on/off without losing the alarm settings.

**2.5.2 Alarm Time**

- This design assumes that the scroll wheel will give a good enough experience to be able to scroll through the clock.
- If the scroll wheel doesn't work out, I'll design a UI with +/- softkeys

**Sonos UI Specification: Alarm Clock**

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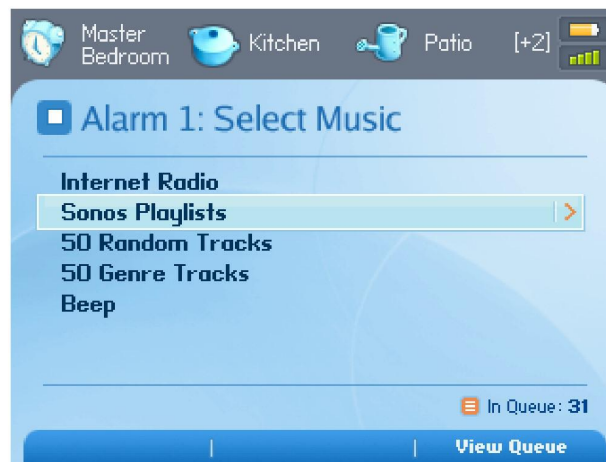
**2.5.3 Alarm Zone**

The alarm will sound in the Master Bedroom, and any zone that happens to be linked to the Master Bedroom. This version doesn't show the concept of Zone Scenes yet (see last chapter in this doc).

**2.5.4 Alarm Frequency**

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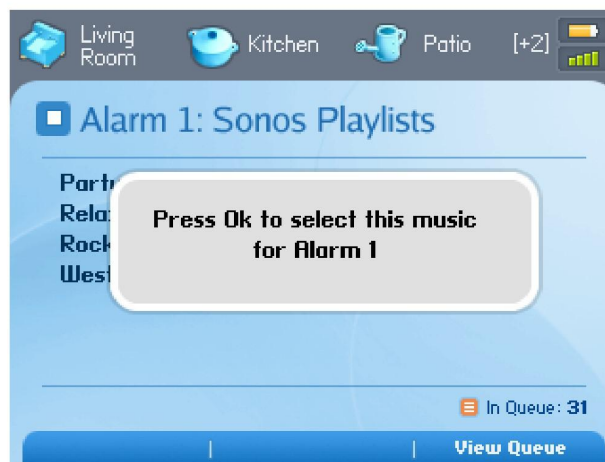
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**2.5.5 Alarm Music**

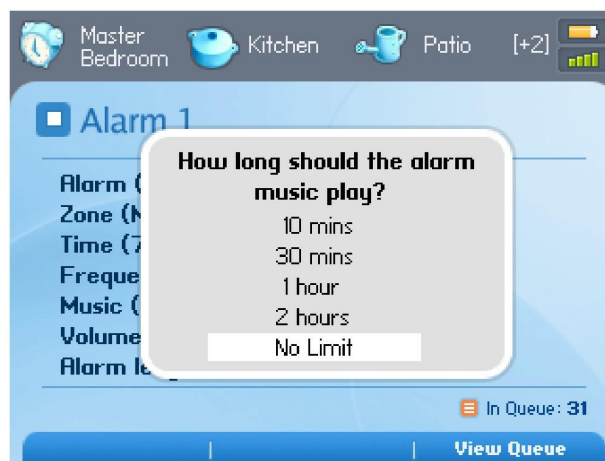
Sonos Playlists highlighted&gt; OK



Party Music highlighted&gt; OK

**Sonos UI Specification: Alarm Clock**

- When OK is pressed on this screen, should we navigate back to the Alarm 1 main screen (i.e transport back several screens)
- The selection of music for the Alarm is akin to Browsing through the Music Library (but limited to Sonos Playlists and Internet Radio, and current Queue).

**2.5.6 Alarm Length**

The 'No Limit' option means that the music will continue playing until the user chooses Pause  
 TBD: should the user be able to set a time to stop the music.

**Sonos UI Specification: Alarm Clock****2.5.7 Set Alarm Volume Level**

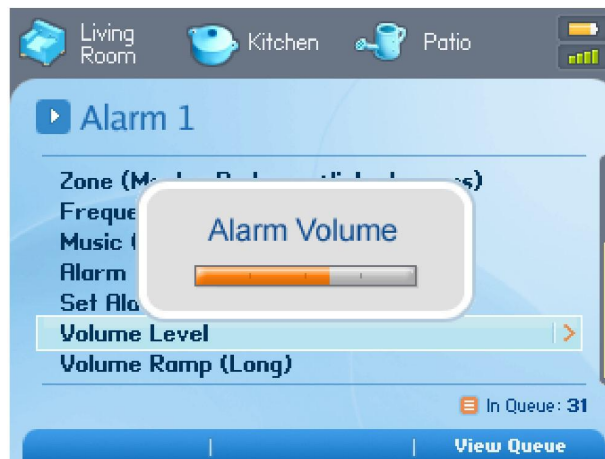
This setting allows the user to either have the alarm sound at whatever the volume level the zone (s) happens to be at (i.e. where the user last left the volume), or they can choose for the Alarm to have it's own volume level.



- Use current Volumes – the alarm will sound in the Zones at whatever level they were set to last by the user.
- Set Volumes for this Alarm – this will cause the setting below to be available in the UI.

**2.5.8 Alarm Level**

This setting only appears if the above setting is set to “Set Volume for this Alarm”





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**2.5.9 Volume Ramp**

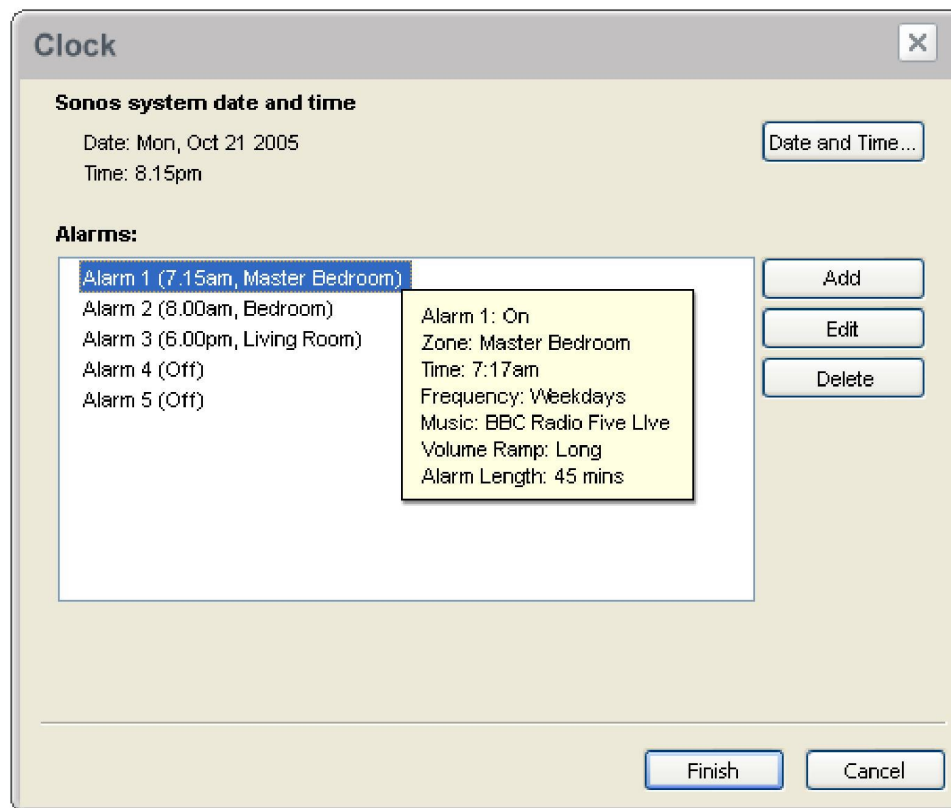
- The requirement for such a setting is questionable. It could be the case that everyone wants the Volume to ramp, and that a length setting for this is just overkill. The ramp should always be ON at a setting that Sonos decides.

**2.6 Setting the current date and time on the Handheld CR**

Interface TBD

- Go to internet for current time?
- Have the DCR 'send' the time as a once only option, or every time it runs
- Manually set the date and time on the CR



**Sonos UI Specification: Alarm Clock****3 UI Spec for DCRs****3.1 Alarm Settings****Tool Tips**

Yellow Tool Tip box shows an overview of the Alarm

**Add Alarms**

- Alarms are named with standard names – no custom names for alarms.
- The system limits the number of alarms to “n” alarms
- If n alarms is exceeded, the following message will show:
  - You can’t add anymore alarms, please delete an alarm before you add a new one [OK]

**Delete**

- Following message:
  - Are you sure you want to delete “Alarm 1”? [Yes] [Cancel]

**Sonos UI Specification: Alarm Clock****3.2 Edit an Alarm**

**Set Up: Alarm 1**

Alarm: On

Time: 7:15am

Zone: Master Bedroom + linked zones

Frequency: Weekdays

Music: BBC Radio Five Live

Alarm Length: 45mins

Alarm Volume: ☐ Use current volume setting  
☒ Set Volume: Low High

Volume Ramp: Long

OK Cancel Apply

**3.2.1 Details of Settings****Alarm**

- On
- Off

**Time**

- Same as default Windows/Mac time setting field

**Zone**

- All zones in alphabetical order with small icons if possible

**Frequency**

- One Time
- Weekdays
- Weekends

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- Everyday

**Music**

- TBD
- Can combo-boxes (drop down menus) have nested lists?
- Drag and drop
- Two lists, one for Internet Radio, One for Sonos Playlists?

**Alarm Length**

- 10 mins
- 30 mins
- 1 hour
- 2 hours
- No Limit

**Alarm Volume**

**Volume Ramp**

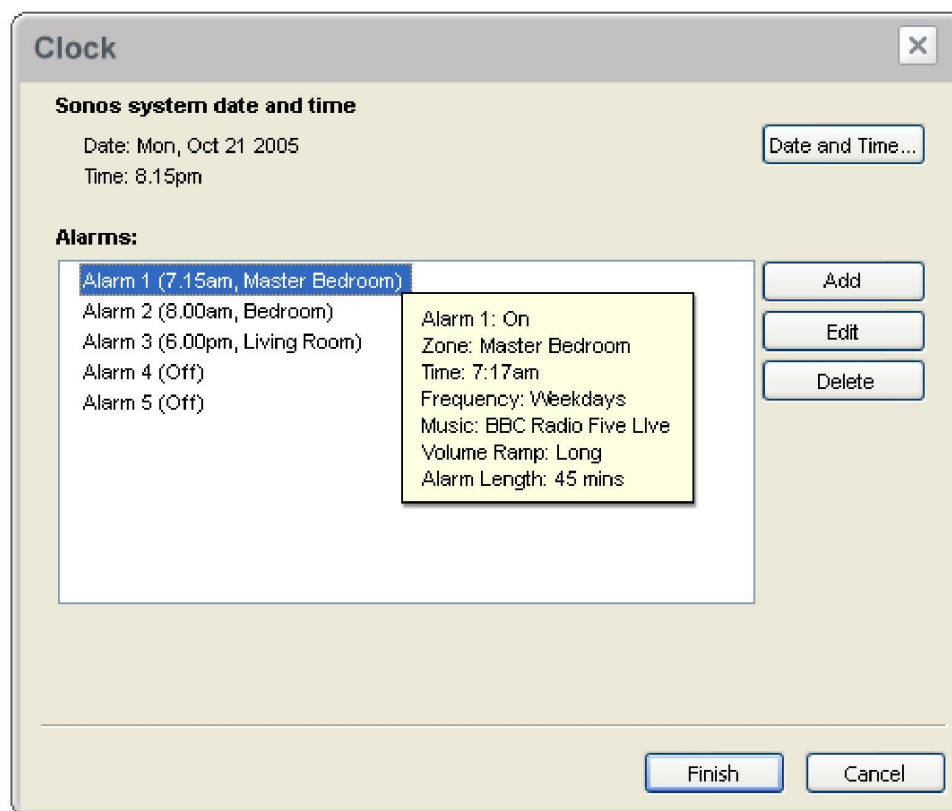
- Should be fixed by Sonos – not user definable

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**3.3 Setting the current date and time on the Desktop Controllers****3.3.1 The date and time should be set during the Wizard if possible.**

UI TBD

**3.3.2 Setting the date and time from the main UI**

**Sonos UI Specification: Alarm Clock**

Date and Time...

Set Up Date and Time

Current Sonos date and time: **October 20, 2005 12:39am**

**Set Sonos time**

Time Format: 12 hour Time zone: GMT-8hours (Pacific)

☒ Automatically adjust the clock for daylight saving changes

☒ Set the date and time from the Internet

Internet Date: October 20, 2005 Internet Time: 12:39:23

☐ Set the date and time manually

To set the Sonos system to this computer's date and time, click the 'Set' button:

Date: October 20 2005

Time: 12:39:23 PM

Set

OK Cancel Apply

Current Time of the Sonos System is shown at the top of the panel.

**Time format**

12 hour

24 hour

Time Zone

**Time Zone**

Standard list of all time zones from GMT-12 hours to GMT+12 hours

**Set date and time from the Internet**

The current internet time is shown. If no internet connection is available, the date and time are replaced with a message:

☒ Set the date and time from the Internet

No internet connction: please check your internet settings, or set the time manually.

☐ Set the time manually

**Set the date and time manually**

**Sonos UI Specification: Alarm Clock**

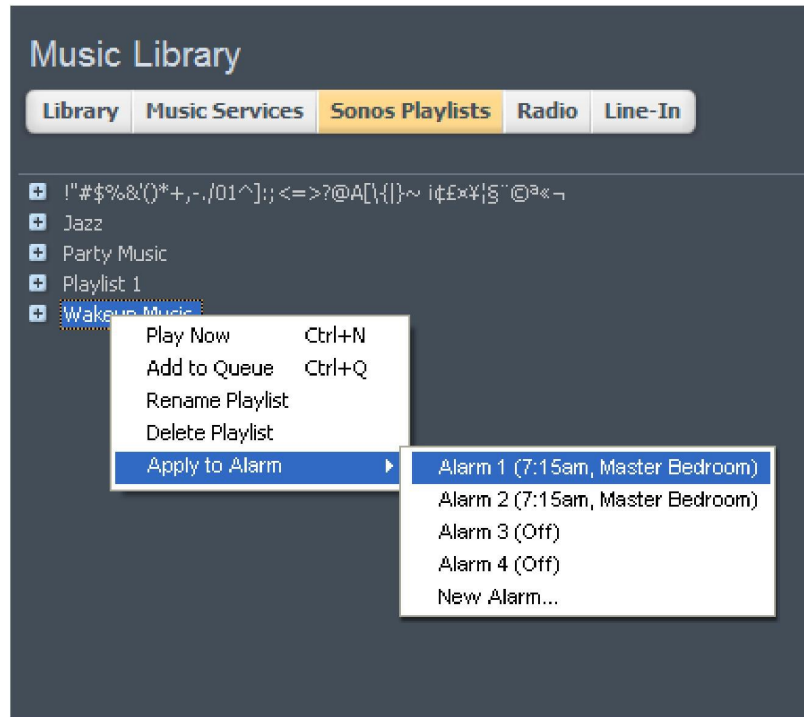
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The date and time can e adjusted manually using standard Windows controls.

The time can also be set to the computer's date and time. This is a 'set once' feature that captures the computer's current date and time when the button is pressed- the Sonos system will not monitor the computers date and time continually.

**Sonos UI Specification: Alarm Clock**

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**3.4 Setting alarm music from the Music Library**

Should the user be able to add to a New alarm – in which case the edit alarm panel should then open.

**3.5 Sleep Timer**

Spec TBD

## **4 Additional ideas**

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### **4.1 Zone Scenes**

Zone Scenes are a mechanism whereby the user can setup and invoke Zone Grouping using a single action. In the current design, Zone groups are created by linking rooms one-by-one.

For Example

Start with **Living Room**

- Link the Kitchen to the Living Room to make a group of **(Living Room + Kitchen)**
- Then link the Den to the **(Living Room + Kitchen)** to make a group of **(Living Room + Kitchen + Den)**

The Zone Scene feature would allow the user to create a group of **(Living Room + Kitchen + Den)** with one command.

‘Party Mode’ that currently ships with the product is one example of a Zone Scene.

Zone Scenes could also be applied to the Alarm Clock. So instead of defining a single zone that the alarm applies to. It can be envisaged that the Alarm Clock would be setup to invoke a Zone Scene that would group zones in a desired way.

#### **Why do this?**

Using Zone Scenes in the alarm clock would reduce the need for the user to make sure that the Zones are grouped appropriately before going to bed.

For example in a House of 4 zones.: Bedroom, Bathroom, Kitchen and Dining Room.

The user may end the day with all Zones connected in a single group. However, she wants an alarm to sound the next morning only in the Bedroom and Bathroom. To avoid having to drop the Kitchen and Dining Room from the current Zone group before going to bed, she could simply set the Alarm clock to run a Zone Scene that connects the Bedroom and Bathroom, but not the Kitchen and Living Room. The alarm would then sound in the desired zones.

This is ideal for people who want an alarm clock to sound in a specific set of rooms on a regular basis.